

Application Serial No: 10/748,922
In reply to Office Action of 25 August 2005

Attorney Docket No. 84480

REMARKS / ARGUMENTS

Claims 1-14 are currently pending in the application. Claims 1-14 are rejected. Claims 1, 6, 7 and 8 are amended by this response. Claims 2 and 9 are canceled without prejudice by this response. Claims 15-20 are newly added by this response.

The Examiner rejected claims under 35 U.S.C. 103(a) as being unpatentable over Baney et al. (ref B: U.S. Patent No. 5,991,476) in view Webb (ref A: U.S. Patent No. 5,655,036).

The Examiner states Baney et al. disclose a system for switching optical communication signals comprising: means (1) for providing an input optical signal; means (230) for splitting the input signal into a plurality of split signals; means (248) for selectively amplifying at least one of the split signals.

The Examiner states the difference between claim 1 and Baney et al. is the addition of means for attenuating the plurality of split signals.

The Examiner states Webb teaches that it was known at the time of the present application to use an EDFA (20) in combination with an attenuator (21) for the function of switching.

The Examiner states that Baney et al. (figure 1) recognized the teaching of Webb as an alternative to the switching disclosed in their system.

The Examiner states as a result, it would have been obvious to have substituted the Webb switching system into Baney et al.

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device because this alternative is suggested by figure 1.

The Examiner states claim 8 is taught by Baney et al. and Webb as applied to claim 1.

The Examiner states the function disclosed by claims 2 and 9 is performed by element (230) of Baney et al.

The Examiner also states a semiconductor amplifier (Claims 3 and 10) would have been an obvious substitution for and EDFA because both elements are well recognized as performing the same function.

The Examiner states claim 4 and 11 are taught by element (20) of Webb.

The Examiner states claims 5 and 12 are disclosed by element (22) of Webb.

The Examiner further states claims 6, 7, 13 and 14 would have been obvious because filtering or using a partially opaque section were common properties of an optical attenuator of the type disclosed by element (21) of Webb.

These rejections and objections are respectfully traversed in view of these amendments and remarks.

Webb appears to teach an active branching unit for interconnecting three cables (two trunk cables and one spur cable) each including optical fibers. In a first interconnection configuration fibers of the trunk cables are connected together via the spur cable. Optical switch means,

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comprised for example by an erbium doped fiber amplifier (EDFA) (20) and an optical attenuator (21) in series, are disposed between optical fibers of the two trunk cables and are such as to pass telecommunications traffic between the trunk cables when, for example, there is fault in the spur cable and an alternative configuration is required. In this case a pump signal is applied to the EDFA (20) and the loss of the attenuator (21) overcome so that traffic can pass directly between the trunk cables and thus be diverted from the spur cable. This path switching can be achieved automatically.

Baney et al. appear to teach an optical switch that includes a pump source, a pump director, and a pump-dependent attenuator. The pump-dependent attenuator passes optical signals when it is supplied with pump energy at a pumping wavelength and attenuates optical signals when it is not supplied with pump energy. The pump source generates pump energy for the pump-dependent attenuator, and the pump director optically manipulates the delivery of pump energy to the pump-dependent attenuator is an erbium-doped fiber (EDF), the pump source is a laser diode, and the pump director is a tunable fiber Bragg grating (FBG). The EDF is located along an optical signal transmission path between an input waveguide and an output waveguide. The tunable FBG is located along a transmission path between the laser diode and the EDF. To

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operate the switch, pump energy at a pumping wavelength is generated by the laser diode and transmitted toward the tunable FBG. To turn on the switch, the FBG is tuned off of the pumping wavelength of the EDF, thereby passing pump energy to the EDF, and to turn off the switch, the FBG is tuned onto the pumping wavelength of the EDF, thereby blocking pump energy to the EDF. An adjustable bandpass filter may also be used as the pump director. The optical switch can also be applied to various optical systems, such as a 1xN switch, add/drop multiplexes, broadcast/multicast switches, and wavelength-selectable lasers.

Applicant teaches a method and apparatus of switching a digital signal from a single input optical fiber to one or more optical fibers comprising the steps of providing an input signal into the input optical fiber, splitting the input optical fiber to form a plurality of split optical fibers each carrying the input signal, amplifying the signal in at least one of the plurality of split optical fibers with a laser activated amplifier, and then attenuating the signal in all of the split optical fibers to produce at least one output signal in one or more of the designated split optical fibers.

Regarding Examiner's rejection of claims 1 and 8, Examiner cites Baney et al. (1) as a prior art reference for a means for providing an input optical signal. Applicant respectfully states that there is no element (1) in the Baney et al reference.

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Applicant respectfully states that he is unable to respond to the Examiner's rejection without a clear understanding of the Examiner's reference.

Regarding Examiner's rejection of claims 2 and 9, Applicant respectfully argues that element (230) of Baney et al. does not serve as prior art. Element (230) is described in Baney et al. as a "1x4 input coupler" (Col 8, Line 53). This is not the same as Applicant's claim 2 or 9 which teaches splitting the input signal in a binary fashion N times to produce 2^N split input signals. The 1x4 input coupler does not accomplish splitting the input signal in a binary fashion N times to produce 2^N split input signals. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Regarding Examiner's rejection of claims 5 and 12, Applicant respectfully argues that element (22) of Webb does not serve as prior art. Element (22) is described in Webb as a "the 3dB couplers 22 via the EDFA" (Col 3, Line 54). This is not the same as Applicant's claim 5 or 12 which claims a controller that controls amplification of the input signal. The 3dB couplers do not control amplification of the input signals. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re*

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Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Regarding Examiner's rejection of claims 6, 7, 13 and 14, Applicant respectfully argues that element (21) of Webb does not serve as prior art. Element (21) is described in Webb as "an optical attenuator" (Col 3, Line 52). This is not the same as Applicant's claim 6, 7, 13 or 14 which claims are narrower having the limitation of "filtering" and "optical filter" in claims 6 and 13 as means for attenuating, and the limitation of "passing said split input signals through partially opaque sections of fiber" and "partially opaque sections of fiber" in claims 7 and 14. These limitations narrow the scope of Applicant's invention sufficiently such that it does not read upon Webb. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Applicant has added claims 15-20 adding additional limitations to their invention to further distinguish it from the prior art. Specifically, the newly added claims teach amplification by the same order of magnitude as the signal to noise ratio of the input signal and attenuation of all of the split input signals by exactly the same order of magnitude as the amplification.

Applicant respectfully suggests in view of these remarks that all grounds for rejection and objection have been removed by the

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foregoing amendments. Applicant states that no new matter has been added by this amendment, and that all of the remaining claims in the application are now believed to be in condition for allowance. Reconsideration and allowance of this application are therefore earnestly solicited.

The Examiner is invited to telephone Jean-Paul A. Nasser, Attorney for Applicant, at 401-832-4736 if, in the opinion of the Examiner, such a telephone call would serve to expedite the prosecution of the subject patent application.

Respectfully submitted,

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23 November 2005

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